General Biology

FEMALE GUPPIES DISCRIMINATE AGAINST PREVIOUS MATES

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For members of any species, finding a mate can require a considerable amount of energy and resources, and may involve significant risks. Curiously, females as well as males of many species, even those in largely monogamous mating systems, seek out and copulate with additional partners over the course of one mating cycle. Both experimental and theoretical knowledge about multiple mating continues to expand, mostly due to recent experiments with birds and insects. Multiple mating has been only briefly examined the guppy (*Poecilia reticulata*). If males of a species contribute no more than sperm to the offspring, multiple mating directly increases male reproductive success. The reproductive success of a female is limited by the number of offspring she can carry; for her, acquiring many mates is not obviously beneficial. For this reason, several hypotheses have been offered to explain female preference for multiple mates. Guppy females are expected to seek multiple mates to maximize indirect benefits and minimize genetic incompatibility. I hypothesized that if females consistently and intentionally mate with a novel male, they must actively discriminate against previous mates. In this study, female guppies were mated to a randomly selected mate and then presented with a new male and either the original male (experiment 1) or his identical twin brother (experiment 2). Both the frequency of the male's courting behavior and the degree of the female's response were observed and quantified. When presented with the identical male, females responded significantly more often and more strongly to the novel male. When a twin was substituted for the original male, female preference for the novel mate was significant as well, although less pronounced. These data indicate that females not only recognize previous mates but actively avoid mating with them, perhaps as a result of their color pattern. This behavior may result in a disadvantage to males who appear similar to previous mates, and may promote variation within populations.